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Head burnt sienna, varying to dragon's blood. Antennæ: first segment burnt sienna; second, proximal half pale, becoming deep red distally; third and fourth segments as before. Beak of same color as head, black tipped, reaching to hind coxæ. Prothorax with a transverse band of burnt sienna cephalad; remainder pale green; much broader caudad. Mesothorax and metathorax pale green; wingpads dusky or black at tips and along outer margins, becoming lighter toward base.

Abdomen greenish, with transverse red-brown patch, of which only the caudal portion reaches the sides; tip reddish. Femora reddish with pale mottling. Front and middle tibiæ pale, black tipped; hind tibiæ deep red. Tarsi pale, black tipped.

A few records were obtained of the time spent in the several stages, but none of these are complete. The insects died in the cages, in spite of the care given them. From these few notes it was found that 2 to 3 days were spent in stage I; 2 to 4 days in stage II; 2 to 3 days in stage III; 5 days (one record) in stage IV. No records for stage V were obtained. December 16, 1913.

NEW MEMBRACIDÆ FROM THE EAST INDIES.¹

BY W. D. FUNKHOUSER,

ITHACA, N. Y.

The following new species are representatives of the subfamily Centrotinæ which appears to be the dominant group of Membracidæ in the oriental regions.

For the species from the Philippine Islands I am indebted to Professor C. F. Baker of the College of Agriculture, Los Banos, P. I.

1. *Gargara nigrocarinata* new species.

Black; finely and densely punctate; thickly covered with short yellowish pubescence. Head long; clypeus extending for half its length beyond the inferior margin of the cheeks; eyes reddish-brown; ocelli black, farther from each other than from the eyes and located above a line passing through middle of eyes. Prothorax obtusely rounded in front; lateral angles prominent, pro-

¹ Contribution from the Entomological Laboratory of Cornell University.

jecting beyond the eyes to a distance of half the width of the latter; median carina beginning between the humeral angles, obsolete before them, more pronounced posteriorly and becoming very strong and sharp on posterior process; posterior process high and tectiform, slightly sinuate before, abruptly acute, and extending just to the internal angle of the tegmina; posterior process with lateral carinæ beginning at apex and extending forward near margin as far as middle of exposed part of scutellum. Tegmina clear hyaline, without markings except basal fifth which is densely black and punctate. Underside of body and femora uniformly black; tibiæ and tarsi ferruginous. Type, female. Length, female, 3.5 mm.; male, 3 mm. Width, female, 1.8 mm.; male, 1.5 mm.

Close to *G. nigro-fasciata* Stål but differing in the shape of the posterior process, the shape of the head and the coloration of the wings. It may be recognized by the high black ridge of the posterior process.

Described from one female and two males, one pair taken at Los Banos, P. I., and the other male at Mt. Makiling, Luzon, P. I. All three specimens collected by Professor C. F. Baker.

2. *Gargara brunnea* new species.

Uniform cinnamon-brown; head and femora darker, approaching chocolate. Very finely punctate, covered with fine, silky, scattered yellow hairs. Head very short, inflexed; twice as wide as long as seen from cephalic view; more pubescent than prothorax above; eyes light yellow-white; ocelli same color as eyes, farther from each other than from eyes and located above a line passing through center of eyes. Prothorax low and wide in front; median carina very faint; humeral angles prominent and blunt; posterior process long and narrow, extending somewhat downward, gradually acuminate and extending beyond internal angle of tegmina, apex slightly carinate. Tegmina somewhat opaque, surface finely wrinkled; no markings except at base which is brown and coarsely punctate. Front and middle femora very much swollen; tibiæ and tarsi ferruginous; tibiæ very finely spined. Type, female. Length, 3.7 mm.; width, 2 mm.

Locality: Mt. Makiling, Philippine Islands. Collected by Professor C. F. Baker.

Near *G. tuberculata* Funkh., but smaller, head much shorter, prothorax without markings, and wings without tubercles.

3. *Gargara trifoliata* new species.

All parts of the body uniform brilliant jet black; densely but coarsely punctate and sparsely covered with yellowish pubescence. Head almost twice as broad as long, clypeus very distinct; eyes cloudy, mottled with dark brown; ocelli pearly white, farther from each other than from the eyes and situated above a line passing through center of eyes. Pronotum rather high and convex in front; humeral angles sloping, not prominent; no median carina except

on posterior process; posterior process thick and heavy at base, sharp median and lateral carinæ, strongly curved downward, gradually acuminate, reaching to a point midway between internal angle and apex of tegmina. Tegmina densely black for basal two thirds with large trifoliate white spot on this region, base punctate; apical third yellowish-hyaline; tip fuscous. Wings with three apical areas. Underside of body, femora, tibiæ and tarsi jet black. Sides of meso and metathorax with thick silvery pubescence. Type, female. Length 8 mm.; width, 4 mm.

Locality: Mt. Makiling, Philippine Islands. Collected by Professor C. F. Baker.

Size of *G. majuscula* Dist., but very distinct in markings and particularly in the peculiar shape of the posterior process of the pronotum. May be easily recognized by its large size and by the large trifoliate white spot on the tegmina.

4. ***Gargara attenuata*** new species.

Very dark chocolate brown; finely punctate and sparingly pubescent. Head almost as long as wide, slightly rugose, distinct median ridge, pubescence thicker than on pronotum above; eyes yellowish, somewhat mottled with brown; ocelli pearly white, farther from each other than from the eyes, situated well above a line drawn through center of eyes. Pronotum smooth, convex, marked with a black semicircle above each eye, no median carina except on posterior process; posterior process suddenly acuminate at apex, sharply carinate above, curved slightly downward at extreme tip, extending just beyond internal angle of tegmina. Tegmina subhyaline, clouded with ferruginous just behind middle, tip fuscous; veins bordered with fine hairs. Under surface of body and femora, except tips, deep brown. Extremities of femora light, tibiæ and tarsi light ferruginous, claws brown. Type, female. Male slightly smaller and darker. Length, female, 3.4 mm.; width, 1.5 mm.

Locality: Banguay Island.

Near *G. robusta* Dist., but smaller, differs in the length and shape of the posterior process and in the fact that the base of the tegmina is not punctate.

I have specimens from this same locality which I determine as *Gargara affinis* Dist., described from Bombay (Dixon), Tenasserim, Calcutta and Myitta (Doherty), and *Gargara robusta* Dist., described from Kurseong, both of which are close to the above species.

5. ***Gargara minuta*** new species.

Small; black; shining; coarsely punctured; very sparsely pubescent. Head longer than broad, clypeus produced for half its length beyond the line of the cheeks; eyes clear translucent white; ocelli pearly white. Pronotum convex in front; median carina apparent only on posterior process; posterior process

set off from the rest of the prothorax by a deep indentation, lateral and median carinæ distinct, process reaching to internal angle of tegmina. Tegmina reddish, subopaque, base black and punctured, apex almost hyaline. Under parts of body and legs black. Extremity of femora and tarsi flavous-ferruginous. Type, female. Length, female, 3 mm.; male, 2.5 mm. Width, female, 1.6 mm.; male, 1.4 mm.

Locality: Banguay Island.

This is one of the smallest species of the genus which I have seen, some of the males being less than $2\frac{1}{2}$ mm. in length. The species is to be recognized not only by its small size, but by the shining black color and by the clear white translucent eyes.

The male, besides being smaller, shows a broader hyaline area at the apex of the tegmina.

6. *Gargara sumbawæ* new species.

Head, pronotum, except dorsal median carina of posterior process, under surface of body, and femora dark clove brown, almost black. Median carina of posterior process, extremities of femora, tibiæ and tarsi yellowish. Claws brown. Head almost as long as broad, densely pubescent, lightly inflexed; eyes yellowish; ocelli white, almost equidistant from each other and from the eyes. Pronotum convex, humeral angles subacute, median carina obsolete before and very sharp throughout the posterior process; posterior process very narrow, exposing much of scutellum, acuminate, turned slightly upward at extremity, just reaching internal angle of tegmina. Tegmina yellow-hyaline, base brown and punctate, no markings beyond base. Sides of meso- and meta-thorax densely pubescent. Tibiæ with fine spines. Type, male. Length, 4.5 mm.; width, 2 mm.

Locality: Sumbawa Island.

Near *G. brunnea*, but distinct in shape of head and in the position of the pronotal process.

7. *Gargara sinuata* new species.

Small; black; shining; finely punctate, not pubescent. Head twice as wide as long, much reflexed below; eyes very large and prominent; ocelli very large and protruding. Prothorax convex, pronotum deeply indented above margin of head; humeral angles not prominent, blunt; strong sharp median carina extending from head to apex of posterior process; posterior process deeply sinuate and strongly produced upward, very suddenly acuminate, distal half not touching tegmina, extending as far as internal angle of tegmina, lateral carinæ distinct. Tegmina broad, base black and punctate, entire costal portion uniform ferruginous-opaque, apical fourth hyaline, veins prominent. Under parts of body and femora black; femora not swollen. Tibiæ simple, ferruginous, extremities lighter; tarsi flavous; claws flavous. Type, male. Length, 3 mm.; width, 1.4 mm.

Locality: Banguay Island.

A very remarkable little species, approaching the genus *Ebhul* Walk., in the structure of the posterior process, but differing in the character of the head and legs, and having the wing venation of a true *Gargara*. May be recognized at once by the sinuate and elevated posterior process and the very large prominent eyes and ocelli.

8. *Tricentrus decurvatus* new species.

Dark castaneous brown; finely punctate; densely pubescent with long golden hairs. Head as long as broad; clypeus almost square; eyes reddish; ocelli small, yellow, situated on a line passing through center of eyes. Pronotum high; horns triquerate, projecting almost directly outward just as far as the humeral angles, very slightly turned upward and backward, anterior edge rounded and posterior almost straight as seen from above; percurrent median carina strongest on posterior process; posterior process narrow, decurved, extending almost to tips of tegmina, sharply carinate above. Tegmina fuscous-hyaline, base opaque and punctured. Under parts of body and legs reddish; tibiae somewhat swollen; small white granule in joint between femur and tibia on each leg. Type, female. Length, 6 mm.; width, between extremities of horns, 3 mm.

Locality: Dutch New Guinea.

Near *T. gibbosulus* Walk., as I determine that species, but larger, of a different color, and at once recognized by the very long, decurved, pronotal process.

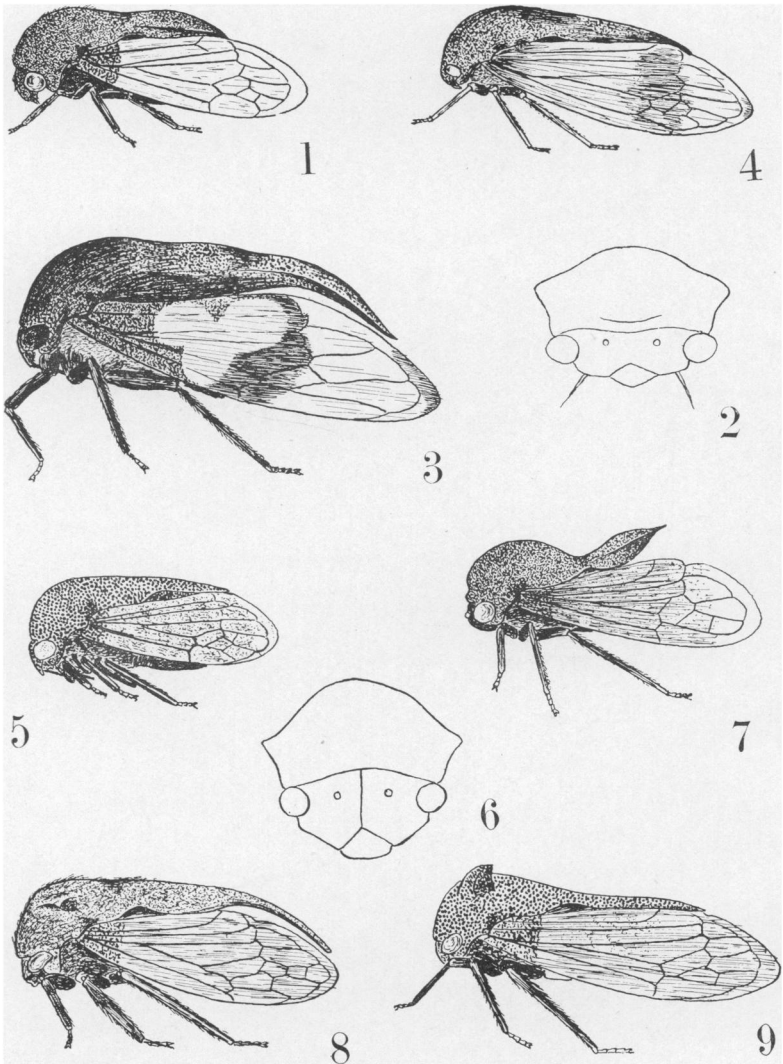
The genus *Tricentrus* is one of the most common genera in this part of the world. It is near *Gargara* but clearly set off from that genus by the presence of pronotal horns and the armed posterior trochanters.

9. *Tricentrus banguensis* new species.

Rich chocolate brown; punctate; finely pubescent. Head equally as long as broad, smooth, clypeus projecting for half its length below line of cheeks; eyes clear lemon yellow; ocelli yellow-white, situated above a line passing through center of eyes. Humeral horns extending strongly outward and upward, and slightly backward, as long as the distance between their bases, faintly bicarinate below. Posterior process slender, gradually acuminate, furnished with median carina which extends obsoletely through pronotum, tip of process reaching internal angle of tegmina. Tegmina smoky subhyaline, brown and punctate at base, veins brown, costal region slightly pilose. Under surface of body densely pubescent. Abdomen, legs and feet ferruginous. Type, female. Length, 5 mm.; width, between extremities of horns, 3 mm.

Locality: Banguay Island.

Near *T. cuneatus* Dist., but smaller, and distinct in the character of the posterior process.



East Indian Membracidæ.

10. *Tricentrus brevis* new species.

Small; black; finely punctate, sparsely pubescent. Head as long as broad; eyes brown; ocelli white; clypeus projecting below line of cheeks and obtusely rounded at apex. Pronotum obtuse, median carina faint. Horns short, sharp, projecting outward and strongly backward and not as high as the dorsal line of the pronotum. Posterior process strongly carinate, extending slightly beyond internal margin of tegmina and lightly upraised at tip. Tegmina smoky hyaline, base black and punctate, narrow ferruginous fascia on outer margin of tip. Under surface of body black and pubescent. Legs and feet uniform ferruginous. Described from three males. Length, 4.6 mm.; width, between extremities of horns, 2.2 mm.

Locality: Banguay Island.

Close to the preceding species but smaller, more robust, and differing in the position of the pronotal horns and in the shape of the posterior process.

11. *Platybelus luteus* new species.

Uniform yellow; punctate; finely pubescent. Head slightly longer than broad, clypeus projecting for more than half its length beyond margin of cheeks; eyes brown; ocelli yellowish. Pronotum indented above head; metopidium convex. Horns long, strongly upraised, slightly carinate, apex sharp, projecting upward, outward and backward. Posterior process slender, slightly decurved, extending as far as the tip of the abdomen, apex fuscous. Median carina prominent, percurrent, strongest on posterior process. Tegmina clear hyaline, very lightly punctate at base. Under parts of body and legs yellow. Type, male. Length, 5.5 mm.; width, between extremities of horns, 3 mm.

Locality: Banguay Island.

Near *P. flavus* Sign., but differing, besides the habitat, in having the tegmina clear hyaline without fuscous markings.

This species bears a strong superficial resemblance to *Sextius virescens* Fairm., of which I have specimens from the East Indies, but the wings have three apical areas and the tibiæ are not dilated.

EXPLANATION OF PLATE VI.

- Fig. 1. *Gargara nigrocarinata* n. sp.
- Fig. 2. *Gargara brunnea* n. sp. Front view.
- Fig. 3. *Gargara trifoliata* n. sp.
- Fig. 4. *Gargara attenuata* n. sp.
- Fig. 5. *Gargara minuta* n. sp.
- Fig. 6. *Gargara sumbawæ* n. sp. Front view.
- Fig. 7. *Gargara sinuata* n. sp.
- Fig. 8. *Tricentrus decurvatus* n. sp.
- Fig. 9. *Tricentrus banguensis* n. sp.